IN THE CLAIMS:

Please amend claims 1, 4, 7 and 8, and add new claims 10-14 as follows:

1. (Currently Amended) A perpendicular magnetic recording medium, comprising:

a substrate;

a soft magnetic underlayer formed on said substrate and containing ferromagnetic α-Fe nanocrystals;

a nonmagnetic intermediate layer formed on said soft magnetic underlayer; and

a perpendicular recording layer formed on said intermediate layer, wherein

said soft magnetic underlayer contains Fe, Ta and C, and a concentration of said Ta ranges from 8 at % to 15 at %, and

a nonmagnetic amorphous or nanocrystalline pre-coating layer is provided between said substrate and said soft magnetic underlayer.

2. (Original) The perpendicular magnetic recording medium according to claim 1, wherein a ratio of the concentration of Ta to a concentration of C (Ta concentration/C concentration) ranges from 0.5 to 0.9.

3. (Cancelled)

4. (Currently Amended) A perpendicular magnetic recording medium, comprising:

a substrate;

a soft magnetic underlayer formed on said substrate and containing ferromagnetic α-Fe nanocrystals;

a nonmagnetic intermediate layer formed on said soft magnetic underlayer; and

a perpendicular recording layer formed on said intermediate layer, wherein

in-plane coercivity Hc (298K) of said soft magnetic underlayer is 1 Oe or less and in-plane coercivity Hc (173K) of said soft magnetic underlayer is 3 Oe or more, the in-plane coercivity Hc (298K) being measured while applying magnetic field along a head running direction at a temperature of 298 K, and the in-plane coercivity Hc (173K) being measured while applying magnetic field along the head running direction at a temperature of 173 K, and

a nonmagnetic amorphous or nanocrystalline pre-coating layer is provided between said substrate and said soft magnetic underlayer.

5. (Original) The perpendicular magnetic recording medium according to claim 1, wherein in-plane coercivity Hc (298K) of said soft magnetic underlayer is 1 Oe or less and in-plane coercivity Hc (173K) of said soft magnetic underlayer is 3 Oe or more, the in-plane coercivity Hc (298K) being measured while applying magnetic field along a head running direction at a temperature of 298 K, and the in-plane coercivity Hc (173K) being measured while applying magnetic field along the head running direction at a temperature of 173 K.

6. (Original) The perpendicular magnetic recording medium according to claim 2, wherein in-plane coercivity Hc (298K) of said soft magnetic underlayer is 1 Oe or less and in-plane coercivity Hc (173K) of said soft magnetic underlayer is 3 Oe or more, the in-plane coercivity Hc (298K) being measured while applying magnetic field along a head running direction at a temperature of 298 K, and the in-plane coercivity Hc (173K) being measured while applying magnetic field along the head running direction at a temperature of 173 K.

7. (Currently Amended) A magnetic storage apparatus, comprising:

the perpendicular magnetic recording medium comprising:

a substrate;

a soft magnetic underlayer formed on said substrate and containing ferromagnetic α-Fe nanocrystals;

a nonmagnetic intermediate layer formed on said soft magnetic underlayer; and

a perpendicular recording layer formed on said intermediate layer, wherein

said soft magnetic underlayer contains Fe, Ta and C, and a concentration of said Ta ranges from 8 at % to 15 at %, and

a nonmagnetic amorphous or nanocrystalline pre-coating layer is provided between said substrate and said soft magnetic underlayer;

a driving section for driving said perpendicular magnetic recording medium in a recording direction;

a magnetic head having a recording section and a reproduction section;

a unit for allowing said magnetic head to relatively move with respect to said perpendicular magnetic recording medium; and a recording/reproduction processing unit for receiving a signal of said magnetic head and reproducing an output signal from said magnetic head, wherein

the reproduction section of said magnetic head is constituted by a high sensitivity element utilizing a magnetoresistance effect or a tunneling magnetoresistive effect.

8. (Currently Amended) A magnetic storage apparatus, comprising:

the perpendicular magnetic recording medium comprising:

a substrate;

a soft magnetic underlayer formed on said substrate and containing ferromagnetic α-Fe nanocrystals;

a nonmagnetic intermediate layer formed on said soft magnetic underlayer; and

a perpendicular recording layer formed on said intermediate layer, wherein

in-plane coercivity Hc (298K) of said soft magnetic underlayer is 1 Oe or less and in-plane coercivity Hc (173K) of said soft magnetic underlayer is 3 Oe or more, the in-plane coercivity Hc (298K) being measured while applying magnetic field along a head running direction at a temperature of 298 K, and the in-plane coercivity Hc (173K) being measured while applying magnetic field along the head running direction at a temperature of 173 K, and

a nonmagnetic amorphous or nanocrystalline pre-coating layer is provided between said substrate and said soft magnetic underlayer;

a driving section for driving said perpendicular magnetic recording medium in a recording direction;

a magnetic head having a recording section and a reproduction section;

a unit for allowing said magnetic head to relatively move with respect to said perpendicular magnetic recording medium; and a recording/reproduction processing unit for receiving a signal of said magnetic head and reproducing an output signal from said magnetic head, wherein

the reproduction section of said magnetic head is constituted by a high sensitivity element utilizing a magnetoresistance effect or a tunneling magnetoresistive effect.

9. (Previously Presented) The perpendicular magnetic recording medium according to claim 1, wherein a concentration of said C is 12 at % or more.

10. (New) The perpendicular magnetic recording medium according to claim 1, wherein said soft magnetic underlayer is provided with ferromagnetic α-Fe nanocrystals by annealing.

11. (New) The perpendicular magnetic recording medium according to claim 2, wherein said soft magnetic underlayer is provided with ferromagnetic α-Fe nanocrystals by annealing.

12. (New) The perpendicular magnetic recording medium according to claim 4, wherein said soft magnetic underlayer is provided with ferromagnetic α-Fe nanocrystals by annealing.

13. (New) The magnetic storage apparatus according to claim 7, wherein said soft magnetic underlayer is provided with ferromagnetic α-Fe nanocrystals by annealing.

14. (New) The magnetic storage apparatus according to claim 8, wherein said soft magnetic underlayer is provided with ferromagnetic α-Fe nanocrystals by annealing.